

# Super Immunity

## Lesson 5: Healthy Carbs, Fats, and Proteins

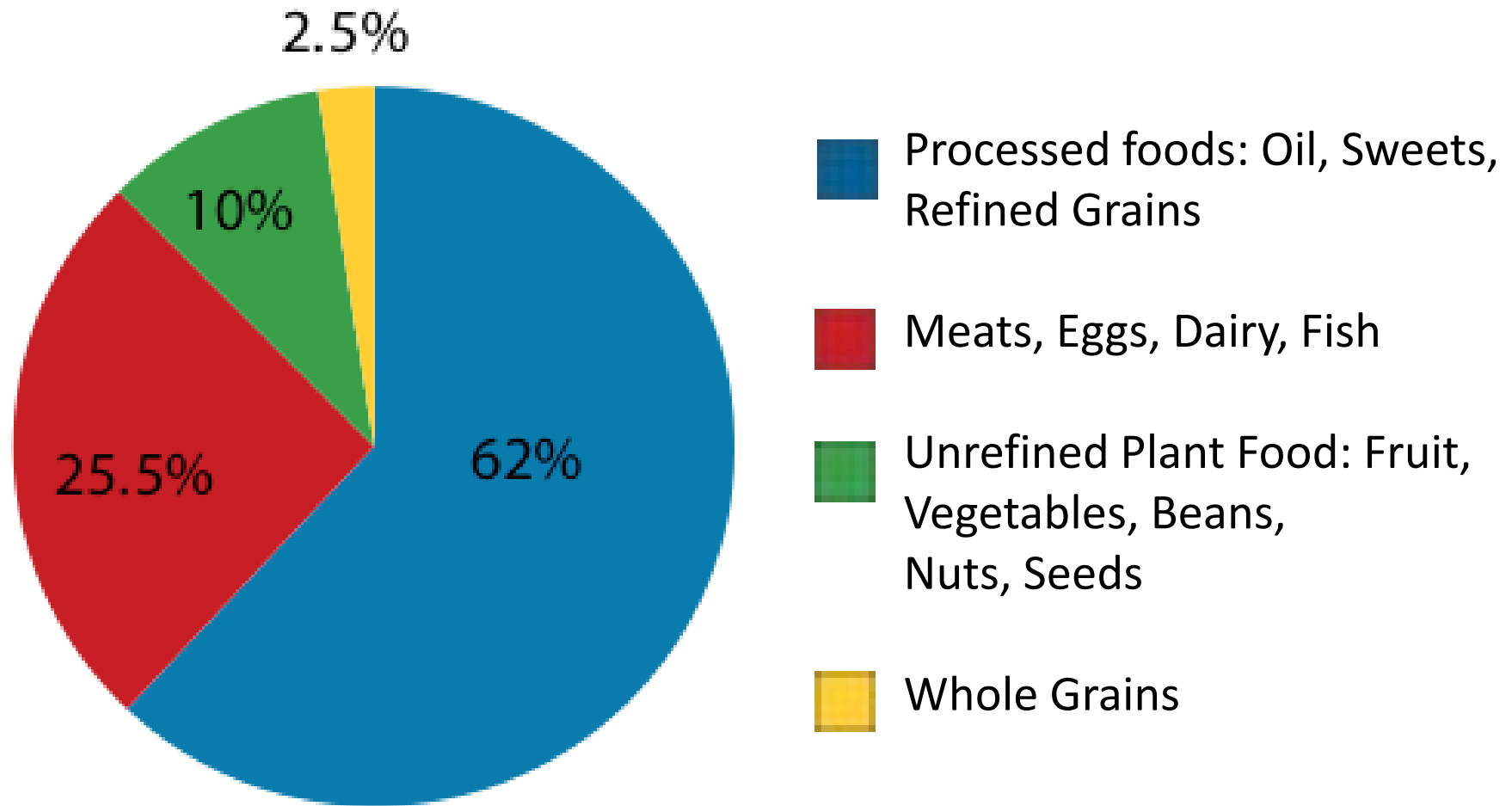
# The Health Equation

- Macronutrients have calories:
  - Carbohydrate, protein, fat
- Micronutrients do not contain calories:
  - Vitamins, minerals, phytochemicals
- Your health depends on the micronutrient content per calorie of your diet.

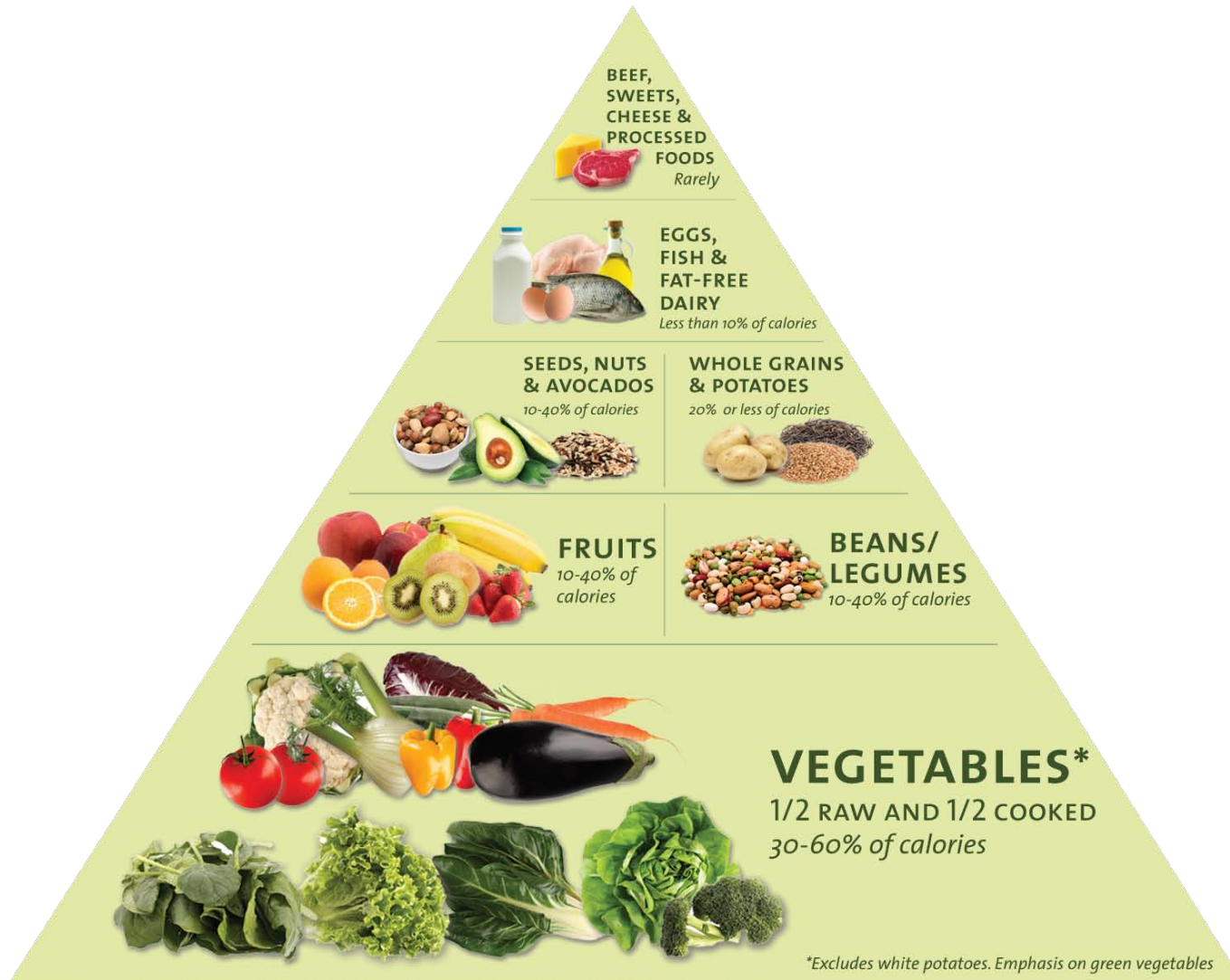
$$H = N/C$$

**(Health = Nutrients / Calories)**

# The Standard American Diet (SAD): primarily low-nutrient, high-calorie foods



# Dr. Fuhrman's Food Pyramid



# Low fat? Low carb? High protein?

- The micronutrient content of your diet is far more important than the ratio of fat to carbohydrate to protein
- Micromanaging the percentage of calories from each macronutrient misses the most critical issue in human nutrition:
  - Getting sufficient micronutrients
  - Meeting your macronutrient needs without excess calories
- Consider the quality of your carbohydrate, fat, and protein sources

# All Carbohydrates Are Not Equal

- Natural carbohydrate foods:
  - Rich in micronutrients and fiber
  - Contain resistant starch (“prebiotic”)
  - Naturally low glycemic load
  - Not all calories absorbable
- Refined carbohydrate foods:
  - Stripped of micronutrients and fiber
  - High glycemic load
  - High in calories

# High GL Foods and Chronic Disease

- GL is a measure of the blood glucose response to food.
- High GL foods associated with increased risk of:
  - Diabetes
  - Heart disease
  - Breast cancer
  - Colorectal cancer
  - Gallbladder disease
  - Overall chronic disease
- Bagels, cold cereals, and sugary desserts are not just empty calories – they fuel cancers.
- Keep in mind: grinding whole grains into flour increases their glycemic effects

# GI and GL of Common Plant Foods

Food	GI	GL
Black beans	30	7
Red kidney beans	25	8
Lentils	30	5
Split peas	25	6
Black eyed peas	30	13
Corn	52	9
Barley	35	16
Brown rice	75	18
Millet	71	25
Rolled oats	55	13
White rice	83	23
Whole wheat	70	14
White pasta	55	23
Sweet potato	61	17
White potato	(average) 90	26

[i] Foster-Powell K, Holt SHA, Brand-Miller JC. International table of glycemic index and glycemic load values: 2002. Am J Clin Nutr 2002;76:5–56.



# Fiber and Resistant Starch in Common Plant Foods

RS = resistant starch

Percentages are expressed as g/100g dry matter

Food	% RS	% Fiber	% RS + Fiber	Dr. Fuhrman's Nutrient Density Scores
Black beans	26.9	42.6	69.5	10
Northern beans	28.0	41.1	69.1	11
Navy beans	25.9	36.2	62.1	8
Red kidney beans	24.6	36.8	61.4	11
Lentils	25.4	33.1	58.5	14
Split peas	24.5	33.1	57.6	7
Black eyed peas	17.7	32.6	50.3	8
Corn	25.2	19.6	44.7	4
Barley	18.2	17.0	35.2	3
Brown rice	14.8	5.1	20.5	3
Millet	12.6	5.4	18.0	2
Rolled oats	7.2	10.0	17.2	2
White rice	14.1	1.5	15.6	1
Whole wheat	1.7	12.1	13.8	2
White pasta	3.3	5.6	8.9	1
Sweet potato	-	3.0	-	9
White potato	7.0	2.0	9.0	2

Acceptable Carbohydrates	Unacceptable Carbohydrates
Beans and lentils	Sweeteners, sugar, honey, maple syrup
Peas	White flour
Berries	White rice
Tomatoes	Whole-grain pastry flour
Intact whole grains: corn, wild rice, barley, oats, quinoa	Packaged cold cereals
Squash	Commercial fruit juices
Fruit	Fruit-juice sweetened beverages
Sweet potatoes	

# Fat: A Misunderstood Macronutrient

- Fat is perceived as harmful, “low fat” as beneficial
- No evidence that a diet of equal calories that is lower in fat has any advantage for disease prevention
- Health problems associated with “high-fat” diets rich in animal fats, processed oils, trans fats (not natural whole food fat sources)
- Insufficient dietary fat can cause health problems:
  - Dry skin, thinning hair, muscle cramps, poor sleep, high triglycerides, poor exercise tolerance

# Essential Fatty Acids

- Omega-3, omega-6 fats: the body cannot make them
- Metabolized to eicosanoids: important for regulating the inflammatory response
- Omega-3 more difficult to obtain from foods
- Sources of omega-3 ALA: flax, walnuts, chia, hemp, leafy greens, edamame
- Fish is not recommended as an omega-3 source
- DHA supplementation recommended

# Choose Whole Food Sources of Fat

<u>Nuts, Seeds, and Avocado</u>	<u>Olive Oil</u>
Whole foods	Processed food
175 calories/ounce (approx. ¼ cup)	120 calories/tbsp.
Fat packaged with phytochemicals, plant protein, fiber	100% fat – empty calories. Most micronutrients and all fiber lost.
Promote weight loss	Promotes weight gain
Promote cardiovascular health	Less harmful than animal fat or trans fat, but not health-promoting

No oil, not even olive oil, should be considered a health food.

# Replacing starchy foods or animal products with nuts and seeds: health benefits

- Lower blood sugar
- Lower cholesterol
- Better LDL/HDL ratio
- Lower triglycerides
- Better antioxidant status
- Better absorption of phytochemicals from vegetables
- Better diabetic control
- Lower weight, not weight gain
- More effective reversal of heart disease
- Prevention of arrhythmias (in heart patients)
- Better nutritional diversity, satisfaction with fewer calories
- Increased protection against cancer
- Better muscle and bone mass with aging



# Nuts & Seeds, Cholesterol, and Heart Disease

- Phytochemical-rich: lignans, bioflavonoids, minerals, phytosterols, vitamin E, ellagitannins
- Five servings per week → 34% reduction in heart disease risk
- Two servings per week → 50% reduced risk of sudden cardiac death

# Nuts & Seeds Promote Weight Loss

- High in calories, but promote satiety and suppress appetite – leads to successful long term weight loss
- People who consume more nuts and seeds are more likely to be slim, less likely to develop diabetes
- Because of their calorie density, limit according to your individual caloric needs



# Protein

- Most Americans consumes about 100 grams of protein daily – about 50% more than recommended amount
- Many dieters, athletes, etc. consistently aim to get even more protein because of incorrect nutritional information

# Animal Protein vs. Plant Protein

- Nutrition education materials provided to schools by meat, dairy, and egg industries
- Propagating the myth that we need these foods to be properly nourished

A healthful assortment of plant foods provides sufficient protein (about 50 grams/1000 calories)

# Extra Protein for Athletes?

- Vigorous and prolonged physical activity does increase protein requirements
- Increased protein need proportional to increased caloric need
- Meeting increased caloric need with plant foods will provide sufficient raw material for muscle protein synthesis

# Protein Content of Common Plant Foods

	Protein in Grams	Calories
One cup peas	9	120
One cup lentils	16	175
Two cups spinach	10.8	84
Two slices whole grain bread	10	120
One corn on the cob	4.2	150
One cup brown rice	4.8	220
Two oz sunflower seeds	7.5	175
TOTAL	62.3	1044

# Green Vegetables: Protein in a Super Immunity Package

- Green vegetables are almost 50% protein, and this protein is packaged with immune-supporting and anti-cancer compounds
- Exercise generates free radicals
- Antioxidants in colorful vegetables protect against oxidative damage

# Excess Protein is Harmful

- Consuming extra protein does not build muscle – only exercise builds muscle
- Excess dietary protein is either converted to fat or eliminated by the kidneys
  - Leaches minerals from bone
  - Promotes development of kidney stones

# Insulin-like Growth Factor-1 (IGF-1)

- Important for childhood growth and development, but high levels are harmful in adults
- IGF-1 levels are elevated primarily by protein consumption
- IGF-1 activity necessary in some tissues: local IGF-1 vs. circulating IGF-1


# Elevated IGF-1 Fuels Aging, Cancer

- IGF-1 signaling enhances activity of NF- $\kappa$ B, promoting expression of pro-inflammatory genes
- Reduced IGF-1 levels are associated with reduced oxidative damage (oxidative damage accelerates aging)
- High IGF-1 levels associated with increased risk of breast, prostate, colon cancers



# Plant vs. Animal Protein and IGF-1

- Essential vs. non-essential amino acids
  - “Complete” (animal) protein causes greater increases in IGF-1
  - Of all plant proteins, soy is most “complete”
    - Non-soy plant protein associated with lower IGF-1 levels
    - Soy protein associated with higher IGF-1 levels, but also increases IGFBPs – likely not as risky as animal protein
    - Isolated soy protein vs. soybeans
- ➔ Minimize or avoid animal protein and isolated soy protein for healthy IGF-1 levels



# IGF-1, Cancer, and Longevity

- Combination of low IGF-1 levels and high levels of anti-inflammatory cytokines are thought to be the reason that centenarians live into their 100s and “escape” cancer
- These two factors promote activity of the tumor suppressor

# Review: 5 Rules for a Powerful Immune System

1. Eat a large salad every day
2. Eat at least ½ cup of beans every day
3. Eat at least 3 fresh fruits daily, especially, berries, pomegranate, cherries, plums, oranges
4. Eat at least one ounce of raw nuts and seeds each day
5. Eat at least one large (double-size) serving of green vegetables daily, either raw, steamed, or in soups or stews.

# Top 30 Super Foods

1. Collard Greens, Mustard Greens, Turnip Greens 100	16. Mushrooms 35
2. Kale 100	17. Tomatoes and Tomato Products 33
3. Watercress 100	18. Pomegranates/ Pomegranate Juice 30
4. Brussels Sprouts 90	19. Carrots/ Carrot Juice 30 / 37
5. Bok Choy 85	20. Blackberries 29
6. Spinach 82	21. Raspberries 27
7. Arugula 77	22. Blueberries 27
8. Cabbage 59	23. Oranges 27
9. Broccoli 52	24. Seeds: Flax, Sunflower, Sesame, Hemp, Chia 25 (avg)
10. Cauliflower 51	25. Red Grapes 24
11. Romaine Lettuce 45	26. Cherries 21
12. Green & Red Pepper 41	27. Plums 11
13. Onions 37	28. Beans (all varieties) 11
14. Leeks 36	29. Walnuts 10
15. Strawberries 35	30. Pistachio Nuts 9

# Avoid the 5 Deadliest Foods:

1. Barbecued, processed, or commercial red meat
  2. Fried foods
  3. Full-fat dairy (cheese, ice cream, butter, whole milk) and trans fats (margarine)
  4. Soft drinks, sugar, and artificial sweeteners
  5. White flour products
- Processed foods and animal products should comprise less than 10% of your total calories.

# Your taste buds will change.

- Over time, you will grow to enjoy the healthier options more than the conventional junk foods
- What may seem radical now will soon become delicious and life-changing
- We can have an immune-supporting, cancer-protective diet that is also great-tasting.